Short Communication

Proposal for Incorporation of Nutrition Science in First Year Undergraduate Medical Curriculum in India

Somannavar M.S.
Department of Biochemistry, KLE University’s J N Medical College Belgaum, Karnataka, INDIA

Available online at: www.isca.in
Received 11th August 2012, revised 21st August 2012, accepted 21st September 2012

Abstract

Health and nutrition are intimately and intricately connected. Effective use of dietary interventions and nutritional advice is integral part of the art and science of effective clinical care. The general public and patients approach doctors as the most reliable and trusted source of information on diet and nutrition. Surprisingly very little attention has been given to the formal training provided to doctors in this area. First-year in medical course is an excellent avenue for introducing basic concepts in nutrition. Purpose of this paper is to suggest incorporation of Nutrition science in first year MBBS curriculum. Teaching learning will be accomplished according to following three domains: Cognitive domain (Knowledge of basic physiological and biochemical aspects of nutrition science), Affective domain (appreciate the importance of good nutrition in reducing the incidence of diseases) and Psychomotor domain (measuring anthropometric parameters, calculating body mass index etc). Lectures sessions of 45 minute to 1 hour will be developed for each topic area to address cognitive objectives and will be divided between Physiology and Biochemistry faculty. Reading assignments on the content area will be provided to students and informed about the reference books. Demonstrations and practical sessions of 1 hour duration weekly will be incorporated to meet the psychomotor objectives. Small group discussion sessions of one hour per week will be conducted to achieve affective objective and also to give feedback to students. This proposed clinical nutrition curriculum will be of horizontal integration between Biochemistry and Physiology. By incorporating this plan in First year MBBS curriculum student will develop knowledge, attitude and skills regarding science of nutrition with better clinical correlation.

Keywords: Curriculum plan, nutrition, undergraduate medical education.

Introduction

Health and nutrition are intimately and intricately connected. From the earliest times the effective use of dietary interventions and nutritional advice has been an integral part of the art and science of effective clinical care. In recent decades the whole world has been facing obesity as a huge problem of health and longevity of life. While India is no exception, and obesity prevalence is on the rise right from childhood, there is a peculiarly India-specific problem of high prevalence of both obesity and under nutrition, existing side by side. Further nutrition-related metabolic disorders lead to risk factors of obesity, diabetes mellitus, cardiovascular and neurovascular catastrophes and chronic renal failure. WHO report shows that because of changes in dietary and lifestyle patterns, chronic Non-Communicable Diseases - like obesity, diabetes mellitus, cardiovascular disease (CVD), hypertension, stroke and some types of cancer - are becoming increasingly significant causes of disability and premature death in both developing and newly developed countries. In India due to cultural reasons patients are very keen to know from the doctor what foods to eat and what to avoid during the acute illness or during the management of chronic disease. The general public approach doctors and other health professionals as the most reliable and trusted sources of information on diet and nutrition. Surprisingly very little attention has been given to the formal training provided to doctors in this area. There is a long-standing concern about the lack of an adequate level of knowledge of nutrition within the health professions. Many physicians are not routinely assessing or addressing nutrition issues and they feel less confident in discussing diet related issues with their patients. Moreover Students are routinely reporting inadequate training in nutrition during medical school training. John & Bamji in their editorial on “Nutrition Security” advocate inclusion of appropriate curriculum in general and professional (health, agriculture) education.

Krebs and Primak considers first-year medical course as an excellent avenue for introducing basic concepts in nutrition. But they also mention that it is too early in the curriculum to spend significant amounts of time on nutrition and disease because the students have had limited exposure to pathophysiology and clinical medicine. They have briefly described a comprehensive vertically integrated nutrition curriculum that includes integrated components for all 4 y of medical school and for residency training. Medical Council of India stipulates the rules for medical school curriculum structure and content. These rules start with the three-phase framework of preclinical or first MBBS (12 months); paraclinical, or second MBBS (18 months); and clinical or third MBBS (24 months) plus internship (12 months).
months), a period devoted to rotating clinical experiences. First
year MBBS encompasses Anatomy, Physiology and
Biochemistry subjects and curriculum followed in Indian
medical colleges is discipline based.

Purpose of this paper is to suggest a proposal for incorporation
of Nutrition science in first year undergraduate medical
curriculum in India.

Objectives to be achieved are as follows.

**Cognitive objectives:** i. List the functions, sources, calorific
values and recommended allowances of Proteins, Carbohydrates
and Lipids. ii. Explain the followings, giving appropriate
elements Basal metabolic rate, respiratory quotient, Specific
dynamic action, biological value, Net protein utilization,
essential amino acid, Saturated and unsaturated fatty acids, iii.
Discuss the role of ventromedial hypothalamus and lateral
hypothalamus in regulation of food intake (sensory factors and
metabolic factors), iv. Describe the function of white and brown
cells, v. Recall the functional, metabolic and nutritional aspect
of fat-soluble vitamins and discuss briefly their Deficiencies
Toxicity Dietary sources recommended dietary intake, vi.
Discuss briefly the water-soluble vitamins in the human diet
with regard to their Functions, Metabolism, Deficiencies and
toxicity, Dietary sources, recommended dietary intake, vii.
Discuss briefly the macrominerals and microminerals with
regard to their Functions Metabolism. Deficiencies, toxicity
Dietary sources recommended dietary intake.

**Affective objectives:** Appreciate the importance of good
nutrition in reducing the incidence of diseases as important.

**Psychomotor objectives:** i. Measure Anthropometric
parameters (body weight and height, waist circumference, hip
circumference and mid-arm circumference) according to the
checklist. ii. Calculate body mass index and waist hip ratio
according to standard formula.

**Material and Methods**

Lectures sessions of 45 minute to 1 hour will be developed for
each topic area to address cognitive objectives. These lectures
will be divided between Physiology and Biochemistry faculty.
Initially reading assignments on the content area will be
provided to students. They will be informed about the reference
text books. Demonstrations and practical sessions of 1 hour
duration weekly will be incorporated to meet the psychomotor
objectives. Small group Discussion sessions of one hour per
week will be conducted to achieve affective objectives and also
to give feedback to students. (Content is given in appendix I)

Two faculties, one from biochemistry and other from
physiology under the guidance of departmental chairs will meet
2 hour per week for 2 months to develop and to plan for piloting
the curriculum. Two lectures per week for 6 months (divided
into two semesters) will be incorporated in the existing
curriculum. For Practical and Demonstrations one hour per
week for 6 months will be incorporated. During these sessions
students will be given hands on training to measure
anthropometric parameters using a checklist. One Lecture hall
with audiovisual aids for lectures and one practical hall for
demonstrations and practical will be utilized. Two support staff,
one from each respective department will be utilized.

Faculty from biochemistry department will act as the curriculum
coordinator. He will coordinate the lecture/discussion sessions,
conducting practical, reviewing syllabus material and
communication among faculty regarding curriculum. Evaluation
will be simple as in traditional examinations like written tests,
practical examination and oral examination. Data collection will
be integrated into the curriculum. (evaluation questions, design
and instruments are mentioned in appendix II)

**Results and Discussion**

In this paper we have suggested a proposal for incorporation of
nutrition science in first year MBBS curriculum. After
incorporating into first year, nutrition curriculum can be
developed for subsequent years which will be vertically
integrated. Taren et al conducted a study to evaluate the
integrated nutrition education program developed at the
University of Arizona College of medicine. Their study
indicated that the integrated curriculum was a successful and
time-efficient model for inclusion of multidisciplinary
information into undergraduate medical training. They found
that Students could apply their knowledge, received advanced
clinical skills and could identify integrated topics as specific to
the multidisciplinary curriculum area. Students reported
adequacy of nutrition education in their medical school program
10. Walker .W.A explains Medical school curricula as
“sacrosanct” and the addition of new lectures or courses is to be
carefully scrutinized and usually begun as electives. The
scheduled classes and activities are continuously expanding,
allowing little room for new programs. In addition, traditional
courses/lectures are guarded by their organizers and rarely are
these programs eliminated or replaced. He suggests adding a
new body of information (e.g., nutritional science) requires
creative ways to make use of an already existent curriculum.
Accordingly, innovative strategies are needed throughout the
spectrum of medical education to instill a basic knowledge of
nutrition and its application into medical care 11.

**Conclusion**

This proposed clinical nutrition curriculum will be of horizontal
integration between three preclinical subjects. Users will be
predominantly first year medical students, but also faculty from
preclinical departments and medical college.

Uses will be formative information to help students achieve
learning objectives, formative information for curriculum
coordinator and faculty of preclinical departments to guide improvement of curriculum, summative information for departmental chairs and dean of the college regarding performance and program effectiveness.

References


Appendix-II

Evaluation: Evaluation Questions: What percentage of first year students score more than 80% on the knowledge posttest (Multiple Choice Questions)?